भारतीय मानक
Indian Standard

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सोयदुग्ध (नॉन डेयरी उत्पाद) — विशिष्टि

Soymilk (Non-Dairy Product) — Specification

ICS 67.060

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Foodgrains, Allied Products and Other Agricultural Produce Sectional Committee, FAD 16

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Foodgrains, Allied Products and Other Agricultural Produce Sectional Committee had been approved by the Food and Agriculture Division Council.

Soymilk is being popularized all over the world because of its nutritional and medicinal qualities. Due to advancement of technologies to make the suitable product for the Indians and recognizing its role to prevent the human body from the heart problem, osteoporosis, cancer, etc, the soymilk is getting acceptance in the Indian diet. Soymilk is the only alternative for more than fifty percent of the lactose intolerant (to some degree) Indian population who can't digest the dairy milk.

Efforts have therefore been made to utilize soymilk as a plain and flavored protein rich, drink. Such product is being manufactured in India on a commercial scale by cottage industry using medium scale soymilk producing machines. This standard incorporates the technical experience gained from research and production of soymilk. Provision for various micro-nutrients which would ensure optimization of nutritive value of the drinks (plain and flavored soymilk) have also been included.

The process for the production of soymilk for use as such or making sweetened and flavoured drink essentially consists of:

a) Soaking of soy bean to get equal mass addition;
b) Wet grinding the beans and cooking the slurry (100-120°C) under pressure; and
c) Extracting the soymilk from the slurry and packaging suitably for achieving targeted shelf life.

Flavoured soymilk is obtained after adding sweetener, flavour, colour and adding vitamins and minerals optionally and maintaining a suitable *p*H. It may contain permitted edible flavours, permitted colours, salt and extra sugar or sweetening agents.

Flavoured soymilk added with fruit juice is obtained as above but will also contain certain percentage of fruit juice or pulp and shall be homogenized or blended with a high speed blender and maintaining a suitable *p*H. This drink may also contain permitted edible flavours, colours and extra sugar sweetening agent.

While formulating this standard, necessary consideration has been given to the relevant rules prescribed by the Government of India under the *Food Safety and Standards Act*, 2006 and *Legal Metrology (Packaged Commodities) Rules,* 2011. This standard is however, subject to the restriction imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding-off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SOYMILK (NON-DAIRY PRODUCT) — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for soymilk plain, sweetened and flavoured added with fruit juice and pulp and optionally added with minerals and vitamins, if so desired, and then pasteurized or sterilized or UHT (ultra high temperature) processed.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

IS No.	*Title*
1070 : 1992	Reagent grade water (*third revision*)
1224 (Part 1) : 1977	Determination of fat by the Gerber method: Part 1 Milk (*first revision*)
1479 (Part 2) : 1961	Method of test for dairy industry: Part 2 Chemical analysis of milk
2491 : 2013	Food hygiene — General principles — Code of practice (*third revision*)
4238 : 1967	Specification for sterilized milk
4709 : 1968	Specification for flavoured milk
5398 : 1969	Methods for estimation of thiamine (vitamin B_1) in foodstuffs
5399 : 1969	Methods for estimation of riboflavin (vitamin B_2) in foodstuffs
5400 : 1969	Methods for estimation of nicotinic acid (niacin) in foodstuffs
5401 (Part 1) : 2012/ISO 4832 : 2006	Microbiology of food and animal feeding stuffs — horizontal method for the detection and enumeration of coliforms: Part 1 Colony count technique (*second revision*)
5402 : 2012/ ISO 4833 : 2003	Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony count technique at 30° (*second revision*)
5835 : 1970	Method for estimation of vitamin D in foodstuffs
5886 : 1970	Methods for estimation of carotenes and vitamin A (retinol) in foodstuffs
5887	Methods for detection of bacteria responsible for food poisoning
(Part 1) : 1976	Isolation, identification and enumeration of *Escherichia Coli* (*first revision*)
(Part 3) : 1999/ ISO 6579 : 1993	General guidance on methods for detection of *SALMONELLA* (*second revision*)
(Part 7) : 1999	General guidance on methods for isolation and identification of *SHIGELLA*
7219 : 1973	Method for determination of protein in foods and feeds
7234 : 1974	Method for estimation of folic acid in foodstuffs
7481 : 1974	Method for determination of protein efficiency ratio (PER)
7529 : 1975	Method for estimation of vitamin B_{12} in foodstuffs
7530 : 1975	Method for estimation of pyridoxine (vitamin B-6) in foodstuffs
7835 : 2013	Specification for edible medium-fat soya flour (*first revision*)
11622 : 1986	Method for determination of total solids content in condensed milk
13688 : 1999	Packaged pasteurized milk — Specification (*first revision*)
14433 : 2007	Infant milk substitutes — Specification (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Ultra High Temperature (UHT) Treatment — The process of sterilizing the product by heating it at a temperature of not less than 140°C for a minimum period of 3 seconds followed by aseptic packaging.

3.2 Plain Heat Treated Soymilk — Soymilk obtained by the standard procedure including due heat treatment followed by pasteurization.

3.3 Sweetened Plain Soymilk — Soymilk obtained by the procedure given in **3.2** with added sugar or permitted sweetener only (no flavour added).

3.4 Sweetened Flavoured Soymilk — Soymilk obtained by the procedure given in **3.3** and with added permitted flavour and food colour.

3.5 Sweetened Flavoured Sterilized Soymilk — Soymilk obtained by the procedure given in **3.4**, sterilized and packed appropriately as per standard procedure.

3.6 Soymilk Added with Fruit Juice and Pulp (Pasteurized) — Soymilk obtained by the procedure given in **3.2** with added fruit juice, sugar to taste, pasteurized and packed appropriately.

3.7 Soymilk Added with Fruit Juice and Pulp (Sterilized) — Soymilk obtained by the procedure given in **3.2** with added fruit juice, sugar to taste, sterilized and packed appropriately as per procedure.

4 TYPES

4.1 The soymilk shall be of following types:

a) Plain-heat treated (given a temperature of 110°C for 3 min during the process),
b) Sweetened plain,
c) Sweetened flavoured,
d) Sweetened flavoured sterilized, and
e) Soymilk added with fruit juice and pulp (unsterilized and sterilized).

4.2 Any flavoured soymilk shall also be identified according to the flavour added such as vanilla, chocolate, coffee, rose and fruit flavour(s).

5 INGREDIENTS

5.1 The soymilk shall be prepared from good quality soybeans. Only permitted synthetic or natural flavours, food colours, sodium bicarbonate (optional in soak water), salt, sweetener, fruit juice, pulp and added vitamins and minerals optionally shall be used.

5.2 The flavours, colours, sweetener, fruit juice, pulp, vitamins and minerals added shall be of good quality and those which are permitted under the *Food Safety and Standards (Food Product Standards and Food Additives) Regulations,* 2011.

6 REQUIREMENTS

6.1 General

For heat-treated soymilk and its flavoured drinks, pasteurization as given in Annex B of IS 13688 shall be followed. The flavoured drinks shall conform to the requirements prescribed in **4.2**, **4.3**, **4.4** and **4.5** of IS 4709.

6.2 Description

The soymilk shall be in the form of a stable emulsion. It shall also be free from extraneous matter.

6.3 Organoleptic Qualities

The flavour of the soymilk shall be fresh and pleasant. It shall not have rancid taste or musty odour.

6.4 Condition of Manufacture

The soymilk shall be manufactured, packed, stored and distributed under hygienic conditions in licensed premises (*see* IS 2491).

6.5 Protein efficiency ratio (PER) of the protein in the soymilk/drink shall not be less than 2.0 (corrected PER) when determined according to the method given in IS 7481.

6.6 Urease Activity

The soymilk shall not show a change of *p*H by more than 1.0 unit when determined by the method given in Appendix B of IS 7835.

6.7 The material shall comply with the requirements given in Table 1.

Table 1 Requirements for Soymilk

(*Clause* 6.7)

Sl No. (1)	Characteristics (2)	Requirement (3)	Method of Test, Ref to (4)
i)	Total solids, percent by mass, *Min*	5.0	IS 11622
ii)	Fat, percent by mass, *Min*	1.0	IS 1224 (Part 1)
iii)	Protein (N x 6.25), percent by mass, *Min*	2.0	IS 7219
iv)	Turbidity test	To conform to test	Appendix B of IS 4238
v)	Trypsin inhibitor	To conform to test	Annex A of IS 7835
vi)	Total bacterial count per g, *Max*	50 000	IS 5402
vii)	Coliform count per g, *Max*	10	IS 5401 (Part 1)
viii)	Salmonella per g	Absent	IS 5887 (Part 3)
ix)	Shigella per g	Absent	IS 5887 (Part 7)
x)	*E. coli* per g	Absent	IS 5887 (Part 1)

6.8 Subject to prior agreement between the supplier and the purchaser, the material shall comply with the requirements given in Table 2.

7 PACKING

7.1 The soymilk that is plain or flavoured should be filled into bottles, sealed with a crown cork or otherwise and sterilized at a suitable temperature for certain time to extend the shelf life. It may also be packed in poly packs using hand sealer or form fill and sealing machine, pet bottles, tetra pack or other UHT packaging and aseptic packaging.

7.2 Heat treated/pasteurized soymilk shall be packed in glass bottles or any other suitable containers and capped either by aluminium foil or polyethylene. The soymilk may also be supplied to the consumers in

Table 2 Requirements of Vitamins and Minerals for Soymilk

(*Clause* 6.8)

Sl No. (1)	**Characteristics** (2)	**Requirement** (3)	**Method of Test, Ref to** (4)
i)	Vitamin A, µg/100 g, *Min*	172	Clause **5** of IS 5886
ii)	Vitamin B, µg/100 g, *Min*	1.7	IS 5835
iii)	Vitamin B_{12}, µg/100 g, *Min*	0.2	IS 7529
iv)	Folic acid, µg/100 g, *Min*	0.5	IS 7234
v)	Vitamin B_6 (pyridoxine), µg/100g. *Min*	0.2	IS 7530
vi)	Thiamine (as hydro chloride), mg/100 g, *Min*	0.082 5	IS 5398
vii)	Riboflavin (Vitamin B_2), mg/100 g, Min	0.082 5	IS 5399
viii)	Nicotinic acid (Niacin), mg/100 g, *Min*	1.0	IS 5400
ix)	Calcium : Phosphorus	2:1	Clause **17** and **19** of IS 1479 (Part 2) for Ca and P, respectively
x)	Iron, mg/100g, *Min*	1.0	Annex D of IS 14433

NOTE — The Indian Standards on methods of test indicated in col 4 from Sl No. (iii) to (viii) are given for guidance only. As there is no other suitable and easily workable method at present, the manufacturers would be required to maintain a record showing the quantity of these 'added vitamins', added to each batch.

accordance with the agreements arrived at between the consumer and the producer but without affecting the product quality in any way. Sterilized soymilk shall be in glass bottles or sanitary cans and properly sterilized. The containers shall be capped or sealed air-tight before sterilization. UHT/Tetra pack/Aseptic packaging of the soymilk either plain or formulated may also be done.

8 MARKING

8.1 The containers shall be securely closed and the following information shall be marked legibly and indelibly on each container in addition to any other information as is necessary under the *Food Safety and Standards Act,* 2006 and Rules framed thereunder:

a) Name of the material followed by words **'NON-DAIRY PRODUCT'**

b) Trade name or brand name, if any;

c) Name and address of the manufacturer;

d) Batch number;

e) Net quantity;

f) Date of manufacture;

g) Use by date/Best before/Date of expiry as applicable; and

h) Any other information required under the *Legal Metrology (Packaged Commodities) Rules,* 2011.

8.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

8.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act,* 2016 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9 SAMPLING

The representative samples shall be drawn in accordance with Appendix F of IS 4238 and conformity of the material to the requirements of this specification shall be determined by the procedure described in Appendix F of IS 4238.

10 TESTS

10.1 Tests shall be carried out as specified in **6.5**, **6.6** and col 4 of Table 1 and Table 2.

10.2 Quality of Reagents

Unless specified otherwise, pure chemicals and reagent grade water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities, which affect the results of analysis.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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